

What is claimed is:

1. A noise filter comprising:

a ground line for discharging a short-circuit current generated on an electronic apparatus to ground;

5 an inductor which suppresses a noise current, induced on the ground line, flowing from the ground line into the electronic apparatus; and

a resistor connected in parallel with the inductor;
wherein

assuming a lower limit angular frequency of the noise 10 current to be ω_n [rad], inductance of the inductor to be L [H], resistance of the resistor to be R [Ω], and earth capacitance of the electronic apparatus is C [F], a relationship of $\sqrt{L/C} < R < 2\omega_n^2 L$ (provided $C > 1/(4\omega_n^4 L)$) is established.

2. A noise filter comprising:

a ground line for discharging a short-circuit current generated on an electronic apparatus to ground;

5 an inductor which suppresses a noise current, induced on the ground line, flowing from the ground line into the electronic apparatus; and

a resistor connected in parallel with the inductor;
wherein

the inductor has a magnetic saturation characteristic, 10 by which the inductor acts as a circuit element magnetically saturated by the short-circuit current and discharges the

short-circuit current from the electronic apparatus to the ground line.

3. The noise filter as claimed in claim 2, wherein the resistor suppresses a resonant frequency current caused by series resonance of, earth capacitance between the electronic apparatus and ground, and the inductor, and dissipates
5 electric power charged in the inductor.

4. The noise filter as claimed in claim 2, wherein assuming a lower limit angular frequency of the noise current to be ω_n [rad], inductance of the inductor to be L[H], resistance of the resistor to be R[Ω], and earth capacitance
5 of the electronic apparatus is C[F], a relationship of $\sqrt{L/C} < R < 2\omega_n^2 L$ (provided $C > 1/(4\omega_n^4 L)$) is established.

5. The noise filter as claimed in claim 2, wherein assuming an angular frequency of a power supply current to be ω_p [rad], a lower limit angular frequency of the noise current to be ω_n [rad], inductance of the inductor to be L[H], and
5 resistance of the resistor to be R[Ω], a relationship of $10(\omega_p \cdot L) < R < (\omega_n \cdot L)/10$ is established.

6. The noise filter as claimed in claim 2, wherein assuming an angular frequency of a power supply current to be ω_p [rad], a lower limit angular frequency of the noise current

to be $\omega_n[\text{rad}]$, inductance of the inductor to be $L[\text{H}]$, and
5 resistance of the resistor to be $R[\Omega]$, a relationship of
 $100(\omega_p \cdot L) < R < (\omega_n \cdot L)/100$ is established.

7. The noise filter as claimed in claim 2, wherein
assuming an angular frequency of a power supply current to be
 $\omega_p[\text{rad}]$, a lower limit angular frequency of the noise current
to be $\omega_n[\text{rad}]$, inductance of the inductor to be $L[\text{H}]$, and
5 resistance of the resistor to be $R[\Omega]$, a relationship of
 $1000(\omega_p \cdot L) < R < (\omega_n \cdot L)/1000$ is established.

8. The noise filter as claimed in claim 2, wherein a
parallel circuit consisting of the inductor and the resistor
is so formed that one terminal is grounded through the ground
line and another terminal connects to the electronic
5 apparatus.

9. The noise filter as claimed in claim 2, wherein when
the short-circuit current is $25[\text{A}]$, impedance of the noise
filter is $0.1[\Omega]$ or less.

10. The noise filter as claimed in claim 2, wherein when
a frequency of the noise current is $10[\text{kHz}]$, reactance of the
inductor is $2[\text{k}\Omega]$ or more.

11. The noise filter as claimed in claim 2, wherein the
resistor is a variable resistor.

12. The noise filter as claimed in claim 11, wherein
the inductor is a toroidal coil, a parallel circuit consisting
of the toroidal coil and the variable resistor is housed in
a frame, the variable resistor is arranged in a space
5 surrounded by an inner peripheral wall of the toroidal coil,
and resistance varying means for varying resistance of the
variable resistor is provided at such a position as to be able
to be operated from an outside of the frame.

13. An electronic apparatus comprising the noise
filter as claimed in any one of claims 1 to 12.